We claim:

1. A method to write information to two geographically separated virtual tape servers, wherein a first virtual tape server comprises one or more first virtual host devices comprising a first adjustable aggregate bandwidth, wherein said first virtual tape server is capable of communicating with one or more host computers via a virtual tape controller and said one or more first virtual host devices, and wherein a second virtual tape server comprises one or more second virtual host devices comprising a second adjustable aggregate bandwidth, wherein said second virtual tape server is capable of communicating with said one or more host computers via said virtual tape controller and said one or more second virtual host devices, and wherein said first virtual tape server and said second virtual tape server exchange information via said virtual tape controller and at least two channel extenders, comprising the steps of:

providing a file to said virtual tape controller from said one or more host computers;

writing said file to said first virtual tape server;

queuing a copy job in said virtual tape controller, wherein said copy job comprises copying said file to said second virtual tape server;

setting a VTC throughput threshold;

setting an age threshold;

providing said file to said second virtual tape server;

determining the age of said queued copy job;

determining the actual VTC throughput;

22   determining if said actual VTC throughput is greater than said throughput

23   threshold;

24   operative if said actual VTC throughput is greater than said throughput threshold,

25   determining if the age of said queued copy job is less than said age threshold;

26   operative if said actual VTC throughput is greater than said throughput threshold,

27   and if the age of said queued copy job is not less than said age threshold, decreasing said

28   first adjustable aggregate bandwidth.

1   2.   The method of claim 1, further comprising the steps of:

2   setting a nominal first adjustable aggregate bandwidth;

3   operative if the age of said queued copy job is less than said age threshold, setting

4   said first adjustable aggregate bandwidth to said nominal first adjustable aggregate

5   bandwidth.

1   3.   The method of claim 1, further comprising the step of operative if said

2   actual VTC throughput is greater than said throughput threshold, and if the age of said

3   queued copy job is not less than said age threshold, decreasing said second adjustable

4   aggregate bandwidth.

1   4.   The method of claim 3, further comprising the steps of:

2   setting a nominal second adjustable aggregate bandwidth;

3   operative if the age of said queued copy job is less than said age threshold, setting

4   said second adjustable aggregate bandwidth to said nominal second adjustable aggregate

5   bandwidth

1   5.   The method of claim 1, further comprising the step of providing a status

2   signal from said virtual tape controller to each interconnected virtual tape server, wherein

3   said status signal comprises said actual VTC throughput.

1   6.   The method of claim 5, further comprising the steps of:

2   setting a status signal time interval; and

3   providing said status signal at each status signal time interval.

1   7.   The method of claim 6, further comprising the step of providing a status

2   signal comprising the age of the oldest queued copy job.

1   8.   The method of claim 7, wherein said first virtual tape server comprises a

2   first memory, further comprising the step of operative if said actual VTC throughput is

3   greater than said throughput threshold, saving in said first memory the age of the oldest

4   queued copy job.

1   9.   The method of claim 8, wherein said second virtual tape server comprises

2   a second memory, further comprising the step of operative if said actual VTC throughput

3   is greater than said throughput threshold, saving in said second memory the age of the

4   oldest queued copy job.

1   10.   The method of claim 7, further comprising the steps of:

2   determining if the age of the oldest queued copy job is less than said age

3   threshold;

4   operative if the age of the oldest file queued for copying is not less than said age

5   threshold, and if said actual VTC throughput is greater than said throughput threshold,

6   decreasing said first adjustable aggregate bandwidth.

1   11.   The method of claim 10, further comprising the step of operative if the age

2   of the oldest file queued for copying is not less than said age threshold, and if said actual

3   VTC throughput is greater than said throughput threshold, decreasing said second

4   adjustable aggregate bandwidth.

1   12.   An article of manufacture comprising a computer useable medium having

2   computer readable program code disposed therein to write information to two

3   geographically separated virtual tape servers, wherein said article of manufacture

4   comprises one or more first virtual host devices comprising a first adjustable aggregate

5   bandwidth, and wherein said article of manufacture is capable of communicating with

6   one or more host computers via a virtual tape controller and said one or more first virtual

7   host devices, and wherein a second virtual tape server is capable of communicating with

8   said one or more host computers via said virtual tape controller, and wherein said article

9   of manufacture and said second virtual tape server exchange information via said virtual

10   tape controller and at least two channel extenders, the computer readable program code

11   comprising a series of computer readable program steps to effect:

12   receiving a file from said virtual tape controller;

13   receiving from said virtual tape controller a status signal comprising the actual

14   VTC throughput;

15   retrieving a pre-determined throughput threshold;

16   determining if said actual VTC throughput is greater than said throughput

17   threshold;

18   operative if said actual VTC throughput is greater than said throughput threshold:

19   retrieving a pre-determined age threshold;

20   determining the age of a copy job queued in said virtual tape controller, wherein

21   said copy job comprises copying said file to said second virtual tape server;

22   determining if the age of said queued copy job is less than said age threshold;

23   operative if said actual VTC throughput is greater than said throughput threshold,

24   and if the age of said queued copy job is not less than said age threshold, decreasing said

25   first adjustable aggregate bandwidth.

1   13.   The article of manufacture of claim 12, said computer readable program

2   code further comprising a series of computer readable program steps to effect:

3   retrieving a pre-determined nominal first adjustable aggregate bandwidth;

4   operative if the age of said queued copy job is less than said age threshold, setting

5   said first adjustable aggregate bandwidth to said nominal first adjustable aggregate

6   bandwidth.

1   14.   The article of manufacture of claim 12, said computer readable program

2   code further comprising a series of computer readable program steps to effect:

3   determining if the age of the oldest queued copy job is less than said age

4   threshold;

5   operative if the age of the oldest queued copy job is not less than said age

6   threshold, and if said actual VTC throughput is greater than said throughput threshold,

7   decreasing said first adjustable aggregate bandwidth.

1   15.   The article of manufacture of claim 14, said computer readable program

2   code further comprising a series of computer readable program steps to effect receiving a

3   status signal from said virtual tape controller comprising the age of the oldest queued

4   copy job.

1   16.   A computer program product usable with a programmable computer

2   processor having computer readable program code embodied therein method to write

3   information to two geographically separated virtual tape servers, wherein a first virtual

4   server comprises one or more virtual host devices comprising an adjustable aggregate

5   bandwidth, wherein said first virtual tape server is capable of communicating with one or

6   more host computers via a virtual tape controller and said one or more virtual host

7   devices, and wherein a second virtual tape server is capable of communicating with said

8   one or more host computers via said virtual tape controller, and wherein said first virtual

9   tape server and said second virtual tape server exchange information via said virtual tape

10   controller and at least two channel extenders, comprising:

11   computer readable program code which causes said programmable computer

12   processor to receive a file from said virtual tape controller;

13   computer readable program code which causes said programmable computer

14   processor to receive from said virtual tape controller a status signal comprising the actual

15   VTC throughput;

16   computer readable program code which causes said programmable computer

17   processor to retrieve a pre-determined throughput threshold;

18   computer readable program code which causes said programmable computer

19   processor to determine if said actual VTC throughput is greater than said throughput

20   threshold;

21   computer readable program code which, if said actual VTC throughput is greater

22 than said throughput threshold, causes said programmable computer processor to retrieve

23 a pre-determined age threshold;

24   computer readable program code which, if said actual VTC throughput is greater

25 than said throughput threshold, causes said programmable computer processor to

26 determine the age of a copy job queued in said virtual tape controller, wherein said copy

27 job comprises copying said file to said second virtual tape server;

28   computer readable program code which, if said actual VTC throughput is greater

29 than said throughput threshold, causes said programmable computer processor to

30 determine if the age of said queued copy job is less than said age threshold;

31   computer readable program code which, if said actual VTC throughput is greater

32 than said throughput threshold and if the age of said queued copy job is not less than said

33 age threshold, causes said programmable computer processor to decrease said adjustable

34 aggregate bandwidth.

1   17.   The computer program product of claim 16, further comprising:

2   computer readable program code which causes said programmable computer

3 processor to retrieve a nominal adjustable aggregate bandwidth;

4   computer readable program code which, if the age of said queued copy job is less

5 than said age threshold, causes said programmable computer processor to set said

6 adjustable aggregate bandwidth to said nominal adjustable aggregate bandwidth.

1   18.   The computer program product of claim 16, further comprising:

2   computer readable program code which causes said programmable computer

3 processor to determine if the age of the oldest queued copy job is less than said age

4 threshold;

5   computer readable program code which, if the age of the oldest queued copy job

6 is not less than said age threshold and if said actual VTC throughput is greater than said

7 throughput threshold, causes said programmable computer processor to decrease said

8 adjustable aggregate bandwidth.

1   19.   The computer program product of claim 18, further comprising computer

2 readable program code which causes said programmable computer processor to receive a

3 status signal from said virtual tape controller comprising the age of the oldest queued

4 copy job.